

projection display devices arranged in matrix.

In manufacturing such multi rear projection television, it is important to make junctures between screen portions inconspicuous. Therefore, if the rear projection television has a skirt portion, it is impossible to manufacture the multi rear projection television. In order to solve this problem, it is general in the conventional multi rear projection television to project light beams emitted by projectors onto a screen without folding them by using reflection mirrors. In such case, there are new problems of necessity of large scale construction in setting a multi rear projection television, increase of cost for manufacturing the multi rear projection television, impossibility of mass production of the multi rear projection television and necessity of a room for housing the multi rear projection television, which is large in depth enough to obtain a required projection length without using the folding of light beam.

As means for solving some of these new problems, JP H5-88264A discloses a construction of a rear projection television in which a screen is provided on a whole front surface of a casing thereof, a projector is arranged such that light emitted therefrom is directly directed to an upper plate of the casing and a large size reflection mirror is provided obliquely on a lower surface of the upper plate to reflect the light emitted from the projector onto the screen. With this construction of the rear

projection television, there is no skirt portion provided in the casing. However, since the large reflection mirror is provided obliquely on the side of the upper plate such that an incident angle of light to the screen becomes not substantially large, the size of the casing in depth is reduced to only about a half to one third the size, that is, a diagonal size, of the screen at best. Further, since the projector is unnaturally arranged to project light upward, the maintenance of the rear projection television becomes troublesome.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a rear projection television having a size, which is reduced by removing a skirt portion thereof and reducing a depth length thereof, and a projection method for use in the rear projection television.

Another object of the present invention is to provide a rear projection television capable of improving the quality of image projected onto a screen thereof by removing stray light projected onto a screen, with which a ghost image is produced on the screen, and a projection method for use in the rear projection television.

Further object of the present invention is to provide a rear projection television capable of improving luminance of an image on a screen by reducing the number of flat reflection mirrors and a projection method for use in the rear projection television.

In a rear projection television according to the present invention, an end side flat reflection mirror in a casing thereof is arranged in the vicinity of an upper edge portion of a projection screen to reflect light beam emitted from a projector to a whole rear surface of the screen. The rear projection television according to the present invention is featured by that an optical axis of the light beam projected up to the end side flat reflection mirror and the screen is slanted to the screen to gradually reduce a distance between the optical axis and the screen.

In such rear projection television, it is a feature that a focusing optical system constructed with a plurality of focusing mirrors for expanding and projecting the light beam is provided between the end side reflection mirror and the projector. The focusing optical system may be constructed with a first mirror for reflecting a light from an image display element for forming an image information, a second mirror for reflecting a light reflected by the first mirror, a third mirror for reflecting light reflected by the second mirror and a fourth mirror for reflecting light reflected by the third mirror. It is preferable to arrange the first to fourth mirrors such that the light reflected by the fourth mirror is incident on the end side flat reflection mirror.

The rear projection television according to the present invention is featured by further comprising a flat reflection mirror provided on a rear wall of the casing